

A. Cover Sheet

1. Specify: ☐ agricultural project ☐ individual application
 ☐ urban project ☐ joint application
2. Proposal Title: **Lodi-Woodbridge Winegrape Commission's Program for Reducing NPS Pollution and Increasing Water use Efficiency in Vineyards**
3. Principal applicant: **Lodi-Woodbridge Winegrape Commission**
4. Contact: **Dr. Clifford P. Ohmart, Research/IPM Director**
5. Mailing Address: **2545 West Turner Rd., Lodi, CA 95242**
6. Telephone: **209 367 4727**
7. Fax: **209 367 0737**
8. E-mail: cliff@lodiwine.com
9. Funds requested: **\$217,440**
10. Applicant cost share funds pledged: **\$147,860**
11. Duration: **8/2001 to 8/2003**
12. State Assembly and Senate districts and Congressional districts where the project is to be conducted: **Assembly Districts 8 & 10; Senate Districts 4 & 5; Congressional District 11**
13. Location and geographic boundaries of the project: **California Dept. of Food and Agriculture Crush District #11, southern Sacramento County and northern San Joaquin County (see map Attachment 1)**
14. Name and signature of official representing applicant. By signing below, the applicant declares the following:
 - the truthfulness of all representations in the proposal;
 - the individual signing the form is authorized to submit the application on behalf of the applicant;
 - the applicant will comply with contract terms and conditions identified in Section 11 of this PSP

(printed name of applicant)

(date)

(signature of applicant)

B. Scope of Work - Relevance and Importance

1. Abstract:

Conventional farming of winegrapes adversely impacts 3 of the 4 CALFED Bay-Delta Program objectives: Environmental Quality, Water Supply and Water Quality. It affects environmental quality and surface and ground water quality by providing several sources of non-point source (NPS) pollution, such as offsite movement of pesticides, nutrients, and sediment. Winegrape growing affects water supply because vineyards are irrigated during the growing season. To address these problems the Lodi-Woodbridge Winegrape Commission has, over the last 8 years, developed a sustainable farming program (SFP) for winegrapes that focuses on NPS pollution reduction and water use efficiency. LWWC completed in 2000 the *Lodi Winegrower's Workbook: A Self-Assessment of Integrated Farming Practices* (Ohmart and Matthiasson 2000) to use in implementing the next stage of their SFP. The workbook helps an individual grower to: 1) Identify areas of environmental concern on their farm, particularly NPS pollution problems; 2) Evaluate their vineyard irrigation practices; 3) Develop action plans to address these concerns and provides educational information for implementing these plans; 4) Develop a time-table for carrying out these action plans; 5) Measure the level of adoption of sustainable farming practices on their farm and track improvements over time.

The objectives of LWWC's proposed project are to: 1) Reduce NPS pollution and increase water use efficiency in LWWC vineyards by engaging all LWWC growers (@650) in implementing the *Lodi Winegrower's Workbook* self-assessment program; 2) Measure the impact of the program on reduction of NPS pollutants and increased water use efficiency in LWWC and track the level of adoption of sustainable farming practices using a computer database system and survey tools; 3) Present the self-assessment workbook program as a model pollution prevention and water use efficiency program to other commodity groups in the Central Valley; 4) Report on project results to the CALFED Bay-Delta Program, revise the text of the *Lodi Winegrower's Workbook* based on project experience, and present lessons learned from the project.

2. Statement of critical issues, what is the need for the project, who wants it and why, and how is the project consistent with local or regional water management plans:

The Lower Cosumnes and Lower Mokelumne Watersheds are listed as Category I impaired watersheds by the California State Water Resources board. Furthermore, water quality indicators such as pH, temperature, dissolved oxygen, dissolved nitrogen and total phosphorus, measured in the lower Mokelumne River at Woodbridge dam (in Lodi) from 1980 to 1991, have worsened¹. The Cosumnes and Mokelumne Rivers flow through the Lodi-Woodbridge Winegrape Commission Crush District #11(LWWC), which is the northern half of San Joaquin County and the southern half of Sacramento County (see map Attachment 1). The Consumnes River then joins the Mokelumne River before the Mokelumne flows directly into the Delta making LWWC a high priority region for the CALFED Bay-Delta Program.

Conventional farming of winegrapes impacts surface and ground water quality by providing several sources of non-point source pollution such as offsite movement of pesticides, nutrients, and sediment. Moreover, the average per acre application of pesticides on grapes, measured in pounds of active ingredient, is the one of the highest of any commodity in California (DPR 1999). Other sources of non-point source pollution resulting from growing winegrapes

¹ US Geological Survey Water Resources Data Central Valley Southern Basins Water Year 1980, 1985 and 1991. Pp. 390-392, 301-302, and 356, respectively.

include disking of vineyard soil and sulfur dusting, which result in PM 10's that wash out in rain. Many winegrape vineyards are still flood irrigated which represents non-optimum use of irrigation water.

LWWC is a priority area for implementing a CALFED Bay-Delta Water Use Efficiency program for the following reasons: Conventional farming of winegrapes adversely affects 3 of the 4 CALFED Bay-Delta Program objectives (Environmental Quality, Water Supply and Water Quality); winegrapes are the leading agricultural commodity in CALFED Bay-Delta Program Sub-Region 8 (Valley Floor east of Delta), and vineyards occur in the Category I impaired Lower Cosumnes/Lower Mokelumne watershed. Furthermore, NPS pollution in winegrapes is also a statewide issue. Grapes are the number one commodity in dollar value in California agriculture. As of 1998 there were 350,000 acres of winegrapes in California and new vineyards are being established at a very high rate.

Adoption of sustainable farming practices reduces NPS pollution and improves water use efficiency. What is needed in California agriculture is a vehicle for engaging the average grower in sustainable farming. Several regions and commodities in California have core groups of growers practicing sustainable agriculture but the average grower is not engaged in implementing sustainable farming practices. There is no shortage of efficacious sustainable farming practices that can be implemented on California farms but, up until now, there has been no effective method for delivering this knowledge/technology to the average grower that results in adoption on an area-wide scale. The project proposed here has the potential to be such a method, in particular because the project was developed by growers for growers.

LWWC's *Lodi Winegrower's Workbook* program is consistent with local and regional water management plans because it was developed in concert with our local watershed stewardship plan, *The Lower Mokelumne River Watershed Stewardship Plan (LMRWSP)*. The San Joaquin County Resource Conservation District (SJCRCD) is overseeing the preparation of this voluntary, community-based, watershed stewardship plan and this effort is being funded by the CALFED Bay-Delta Program grant. LWWC is one of the original members of the committee that initiated the project and the writing of the *Lodi Winegrower's Workbook* was paid for, in part, by the LMRWSP grant. The tentative watershed planning area encompasses the Mokelumne River watershed from the Comanche Reservoir west to the Mokelumne's confluence with the Cosumnes River, approximately 18,000 acres. The goals and timetable for this planning effort are to involve interested stakeholders in:

- Creating an outline of issues and opportunities to be addressed in the LMRWSP by January 2000;
- Participating on the LMRWSP's steering committee to develop the plan by March 2001;
- Developing a Watershed Owner's Manual for the Lower Mokelumne River watershed by March 2001;
- Preparing an Action Plan for implementing priority stewardship actions by March, 2002; and
- Implementation of the LMRWSP commencing by March 2002.

LWWC remains an active member in this project and has been attending their monthly meetings since its establishment in 1998. The *Lodi Winegrower's Workbook* grower self-assessment program described in this proposal is the main vehicle that will be used to engage winegrape grower's in the watershed (and the entire LWWC district, which surrounds the watershed) in developing action plans to address the NPS pollution and water use efficiency problems identified in this proposal. The workbook is a great model for engaging the other major agricultural groups in the watershed, the dairy industry and grazing industry. For

example, the dairy industry has recently developed a self-assessment to be used by county dairymen. The LMRWSP is also implementing a self-assessment program for urban and suburban homeowners within the watershed.

3. Nature, scope, and objectives of project:

Over the past 8 years LWWC has developed a sustainable farming program (SFP) for winegrapes. LWWC is North America's leading winegrape-producing region and is made up of all of the winegrape growers in Crush District #11 (650 growers farming 80,000+ acres of vineyards, see map Attachment 1). The SFP focuses on sustainable farming practices that minimize erosion and reduce NPS pollutants such as pesticides and fertilizers. Furthermore, the program has promoted the installation of drip irrigation systems to conserve water use, reduce the risk of off site water movement, and lower the per acre input of synthetic fertilizers.

LWWC's SFP has progressed through two major program stages: grower outreach, which emphasizes grower education; and field implementation, which entails working in the field with individual growers and specific vineyards (Ohmart 1998). Since its inception in 1992 the LWWC SFP developed an elaborate grower outreach program that emphasizes farmer-to-farmer education and farm worker education. The program consists of dissemination of information on sustainable farming practices to all LWWC members in material such as newsletters, pamphlets produced by federal and state agencies, and LWWC reports. LWWC regularly convenes several types of meetings throughout the year, such as: informal early-morning gatherings where growers and experts can exchange ideas; half day research seminars where researchers lecture to growers on the latest experiments on new integrated farming techniques; workshops for Spanish-speaking farmer workers; and field workshops that provide growers with 'hands on' training in integrated farming techniques. LWWC's outreach program fosters continual grower interaction.

From 1995 to the present, LWWC carried out the second program stage of SFP implementation. Forty-three LWWC growers joined the SFP implementation program, enrolling 60 vineyards as SFP demonstration sites, totaling 2300 acres. Furthermore, these growers also manage about 40% of the vineyard acreage in LWWC. Many conventional farming practices were replaced with SFP practices in these vineyards. Weekly monitoring for pests and natural enemies was carried out and a computer database system was created to record, track and summarize vineyard inputs, pesticide use patterns, and level of SFP adoption. Efficient and reliable procedures for measuring the effects of SFP implementation were established during this period. Some of these effects were: the total amount of insecticides used per acre in the SFP vineyards decreased by 25%; the percentage of acreage treated with herbicides declined; the amount of sulfur used per acre declined; there was a 50% decrease in the use of copper-based fungicides; the amount of the pre-emergent herbicides simazine and oryzalin used per acre declined; and the proportion of vineyards treated for arthropod pests declined (Ohmart 1998). LWWC's field implementation program component will continue indefinitely.

LWWC's program is now at the threshold of the third stage of SFP implementation, which is area-wide expansion within the district. Area-wide expansion implies that the entire grower community is involved in implementing SFP. The third stage of SFP implementation has been the most difficult hurdle for any group to overcome and there are no documented examples in US agriculture where true area-wide sustainable farming implementation has been achieved. Successful area-wide SFP implementation will not only result in significant reduction in NPS pollutants and increased water use efficiency but LWWC's SFP program will serve as a model

that can be transferred to other grape-growing regions as well as to other commodity groups in other parts of the California and the US.

In 1999 LWWC developed the *Lodi Winegrower's Workbook: A Self-Assessment of Integrated Farming Practices* as a vehicle for carrying out the third stage of SFP implementation (Ohmart and Matthiasson 2000). The workbook is a self assessment that helps an individual grower to:

- Measure the level of adoption of sustainable farming practices on their farm
- Identify areas of environmental concern on their farm
- Identify water use efficiency concerns in their vineyards
- Develop action plans to address these concerns
- Develop a time-table for carrying out these action plans
- Track improvements of NPS pollution reduction over time

There are 4 project objectives:

1. Engage all LWWC growers (@650) in implementing sustainable farming practices in their vineyards, focusing on reducing NPS pollution and increasing water use efficiency, by using the already established farmer-to-farmer infrastructure in place in LWWC to hold innovative workshops to implement the *Lodi Winegrower's Workbook* self-assessment program.
2. Document and track the level of adoption of sustainable farming practices in LWWC using LWWC's database system and survey tools and measure the impact of the program on reduction of NPS pollutants and increased water use efficiency. This tracking system could serve as a model for other watershed programs and is easily modified for other cropping systems.
3. Present the self-assessment workbook program as a model pollution prevention and increased water use efficiency program to other commodities in the Central Valley.
4. Report on project results, revise the text of the *Lodi Winegrower's Workbook* based on project experience and share lessons learned from the project with all participating or funding groups.

Technical/Scientific Merit, Feasibility, Monitoring and Assessment:

4. Methods, procedures, and facilities:

Objective 1:

Past programs have demonstrated the effectiveness of self-assessment workbooks in bringing about changes in the way growers farm and in NPS pollution reduction. Farm*A*Syst, a national program home-based in Wisconsin, specializes in working with grower groups to develop self-assessment tools and has helped develop programs in the US, Canada and Australia (website www.wisc.edu/farmasyst). For example, they helped the government of Ontario, Canada, develop a program called the Environmental Farm Plan program. Environmental Farm Plans (EFP) are documents prepared by growers to raise their awareness of the environment on their farms. During the process of preparing the documents, they highlight environmental strengths on their farms, identify areas of environmental concern, and set realistic goals to improve environmental conditions according to their own timetables. The EFP started out as a pilot project in 1993 and by 1997 9,000 farmers across the province had actively participated in the program (Carruthers and Tinning 1999). Farm*A*Syst advised LWWC during the development of the *Lodi Winegrower's Workbook* program.

The *Lodi Winegrower's Workbook* uses a systems approach to farming, covering all aspects of growing winegrapes: viticulture, soil management, water management, pest management, habitat management, human resources and wine quality. Each section is divided into 'issues' that address specific practices for sustainable winegrape growing and/or growing quality winegrapes. The workbook contains a total of 105 issues. Each issue is divided into 4 categories, describing vineyard practices that address that issue, from least desirable from an environmental and viticultural perspective, to most desirable. The grower reads each issue, decides which category best describes their practices in the vineyard being evaluated and marks this category on a summary evaluation sheet. The grower then uses these sheets to identify areas of concern in the vineyard being evaluated. Once these areas have been identified, the grower decides which ones they wish to address with an action plan. Forms are provided for growers to draft an action plan and a timetable for completing the plan. There are educational materials throughout the workbook that assist growers in carrying out action plans and implementing specific sustainable farming practices, many of which address specific NPS pollution problems and water use efficiency (Ohmart and Mattiasson 2000). Growers fill out evaluation sheets for their vineyards in subsequent years and track improvements over time by comparing them with evaluation sheets from previous years. The *Lodi Winegrower's Workbook* has received very excellent reviews in the winegrape industry press (Eddy 2000, Fransen 2001)

LWWC has pioneered a workshop setting to implement the workbook program. A grower volunteers to host a workshop at their house/shop, invites 5-10 of their winegrape-growing neighbors to attend the workshop and the workshop is held. It takes about 2-3 hours for a grower to evaluate a particular vineyard using the workbook. Once the evaluation is completed they go through their evaluation sheets to select specific issues identified by the self-assessment as causing NPS concerns, water use efficiency concerns, or other environmental concerns. They then develop action plans to address these areas of concern. Finally the grower creates a timetable for carrying out their action plans. Each attendee receives a free copy of the workbook. Furthermore, the workbook provides growers with technical information on strategies needed to carry out action plans that address all of the NPS and water use efficiency problems identified in this proposal. LWWC staff is available to provide growers with technical assistance for carrying out action plans.

Objective 2:

For methods and procedures to accomplish Objective 2, which is to document the success of the program, see Number 6 'Monitoring and Assessment' below.

Objective 3:

LWWC Research/IPM Director will travel throughout the Central Valley region and meet with local grower organizations to discuss the evolution of LWWC's workbook program and how it can bring about the increase of adoption of sustainable farming practices, reduction in NPS pollution, and an increase in water use efficiency. Based on experience of the workbook program being carried out by LWWC, local grower groups will be encouraged to develop workbook programs for their regions.

Objective 4:

The methods and procedures for Objective 4 are self-explanatory.

5. Schedule of tasks and quarterly total cost estimates (see D1 for more budget details):

	July 2001 - June 2002				July 2002 - June 2003			
	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr
Task 1a: Hold 2 Workbook Workshops per month								
Timeline								
Costs	\$19,346	\$8,346	\$8,346	\$8,346	\$8,346	\$8,346	\$8,346	\$8,346
Task 1b: Implement Workbook Action Plans in Vineyards								
Timeline								
Costs		\$11,803	\$10,803	\$10,803	\$10,803	\$10,803	\$10,803	\$10,803
Task 2a: Track self assessment evaluations								
Timeline								
Costs	\$7,621	\$6,621	\$6,621	\$6,621	\$6,621	\$6,621	\$6,621	\$6,621
Task 2b: Track inputs for demonstration vineyards								
Timeline								
Costs	\$7,846	\$7,846	\$7,846	\$7,846	\$7,846	\$7,846	\$7,846	\$7,846
Task 2c: Carry out district wide grower survey								
Timeline								
Costs						\$10,000	\$10,237	\$10,237
Task 3: Talk with grower groups in Central Valley about grower self assessment programs								
Timeline								
Costs			\$3575	\$3575			\$3575	\$3575
Task 4a: Prepare project fiscal and programmatic reports								
Timeline								
Costs	\$4,450	\$4,450	\$4,450	\$4,450	\$4,450	\$4,450	\$4,450	\$4,450
Task 4b: Revise <i>Lodi Winegrower's Workbook</i>								
Timeline								
Costs						\$4,600	\$4,600	\$4,600

6. Monitoring and Assessment:

Evaluation of the effects of the program will be done in four different ways: 1) Treat the 60 LWWC SFP vineyards (see B3 above, Ohmart 1998) as workbook self-assessment demonstration sites by having the 43 growers who manage these vineyards fill out evaluation sheets in year 1, create and carry out action plans which focus on NPS pollution reduction and increased water use efficiency in year 1, and compare them to evaluation sheets filled out in year 2 (it should be noted that LWWC has 5 years of baseline data of all vineyard inputs and practices for these demonstration sites); 2) Track evaluation summaries of non LWWC SFP growers who fill out the workbook and summarize the results; 3) Analyses of pesticide use in Sacramento and San Joaquin Counties from 1998 to 2003 using the Department of Pesticide Regulations (DPR) pesticide use database; 4) Comparing the results of an area-wide grower survey carried out in LWWC in 2002 with the results for a similar survey done in 1998.

In conjunction with their ongoing SFP program LWWC has developed a Microsoft Access database designed to record, track and summarize the following data for the 60 SFP demonstration vineyards: grower/cooperator descriptors; vineyard characteristics and locations;

weekly pest monitoring for individual vineyards; all vineyard inputs such as pesticides, fertilizers, irrigation; all vineyard practices, such as mowing, tilling, spraying, harvesting, canopy management; workbook workshop attendance; grower self-assessment evaluations from workbook. This data has been collected for the demonstration vineyards since 1996. This database will be used to record, track and summarize all data from the self-assessment workbook project.

Dr. Jeff Dlott, RealToolBox, Inc., a survey expert, will be contracted to design and deliver the grower survey and analyze and summarize the results. This survey will be district-wide, with a goal of 50% or greater response rate so the results are within a $\pm 5\%$ level of statistical accuracy. The survey will measure growers' attitudes and perceptions of the SFP and NPS pollution and water use efficiency problems, as well as measure the level of adoption of specific NPS pollution reducing farming practices and also those that increase water use efficiency. Dr. Dlott was responsible for the original LWWC grower survey carried out in 1998 and which achieved a 47% response rate (Ohmart 1998).

The California Department of Pesticide Regulations Pesticide Use Reporting (PUR) database will be used to evaluate pesticide use trends by all winegrape growers in San Joaquin and Sacramento Counties from 1998 to 2001 to assess the effects of the SFP and workbook programs have had on these trends.

C. Outreach, Community Involvement, and Information Transfer:

1. Outreach to disadvantaged communities and tribal entities:

The goal of LWWC's self-assessment workbook program is to involve all winegrape growers in Crush District #11 in implementing sustainable farming practices. If there are any disadvantaged groups within the crush district they will be included. There are no tribal entities of which I am aware in Crush District #11. However, there are many nationalities represented in LWWC grower community.

2. Training, employment, and capacity building potential:

The project goal for 2001 – 2003 is to hold 30 – 40 workbook workshops attended by 200 – 250 growers. At the workshop participants are trained in the use of the workbook. Filling out the workbook provides the grower with several levels of training: 1) Learning to identify sustainable practices they are already using; 2) Learning to identify areas of concern on their farms relating to water quality issues and water use efficiency issues; 3) Learning the latest sustainable farming techniques; 4) Learning how to implement new sustainable farming techniques.

3. Disseminating project results and promoting their application:

Project results and promoting their application will be accomplished through several means:

1. The LWWC's website will contain a description of the project, summaries of the results of participating growers' vineyard evaluations (listed anonymously), and information on who to contact for more information on the project;

2. The LWWC's IPM Newsletter will periodically contain reports on the project, including summaries of grower evaluations;
3. Updates on the project will be presented at LWWC-sponsored meetings.
4. The project manager will give presentations on the workbook program at agricultural industry symposia, at grower group meetings, and at college and University seminars.
5. LWWC is a member of US EPA Pesticide Environmental Stewardship Program (PESP) and as such is required to periodically submit a program strategy which is then posted on US EPA's website. The self-assessment workbook program is a major part of LWWC's PESP program strategy and will therefore be described in detail on EPA's website.

4. Provide copy of letter sent to local land use entities notifying them of the proposal:

See Attachment 2

D. Qualifications of Applicants, Cooperators, and Establishment of Partnerships:

LWWC is fully committed to carrying out their sustainable farming program with the grower self-assessment project as the main focus. Developing environmentally friendly ways of growing winegrapes is part of LWWC's Mission Statement.

LWWC is recognized throughout the US as a leader in grower-led implementation of IPM and sustainable farming practices. They received the California Department of Pesticide Regulation's IPM Innovator Award in 1994 (the first year it was awarded), the San Joaquin Counties TOPPS Award (Targeted Opportunities for Pollution Prevention) also in 1994, and the US EPA's Pesticide Environmental Stewardship National Award in 1999.

Dr. Clifford Ohmart is very well qualified to manage the project outlined in this proposal and is the senior author of the *Lodi Winegrower's Workbook*. Ohmart is the Research/IPM Director of LWWC and is responsible for the planning and facilitating the implementation of the Commission's SFP program. For the last 5 years he has been instrumental in the development of its farmer-to-farmer education program as well as in setting up its field implementation program. He is a member on the management committee of the SunMaid Raisins Best Management Practices Program, a cooperative venture with The Pew Charitable Trusts. This program has also recently received DPR's IPM Innovator Award. Moreover, he is a steering committee member for the recently initiated Department of Pesticide Regulation Pest Management Alliance program for winegrapes being coordinated by the California Association of Winegrape Growers.

See Attachment 3 for Ohmart's resume.

2&3. Identify and describe role of external cooperators and provide information about partnerships developed to implement the project:

The following agencies are cooperating on the workbook project: LWWC growers; LWWC Pest Control Advisors; San Joaquin County Resource Conservation District; USDA Natural Resource Conservation Service; University of California Cooperative Extension; University of California Sustainable Agriculture Research and Education Program; University of California Department of Pomology; East Bay Municipal Utility District; National Farm*A*Syst/Home*A*Syst Program; US EPA.

At the beginning of the workbook program a 15 member technical advisory committee made up of personnel from the above groups was assembled to oversee writing of the *Lodi Winegrower's Workbook*. The committee continues to oversee the implementation of the workbook program.

Literature Cited:

Carruthers, G. and G. Tinning. 1999. *Environmental Management Systems in Agriculture*. Proceedings National Workshop, May 26-28, 1999. Rural Industries Research & Development Corp. Publ. No. 99/94.

Department of Pesticide Regulation. 1999. Pesticide Use Reporting Database. DPR website www.cadpr.gov.

Eddy, D. 2000. Hands-on winegrape growing: The first comprehensive viticulture guide in a quarter-century is a down-to-earth workbook with modern perspectives. *FruitGrower* June 2000.

Franson, P. 2001. A new resource for Lodi growers. *Wine Business Monthly* 8(1): 18.

Ohmart, C. P. 1998. *Lodi-Woodbridge Winegrape Commission's Biologically Integrated Farming System for Winegrapes: Final Report 9/1/95 to 11/30/98*. Lodi-Woodbridge Winegrape Commission. 81pp. plus attachments.

Ohmart, C. P. and S. K. Matthiasson. 2000. *Lodi Winegrower's Workbook: A self-assessment of integrated farming practices*. Lodi-Woodbridge Winegrape Commission. 135pp.

D. Costs and Benefits:

1. Budget Summary and Breakdown:

YEARLY COSTS	8/1/01 – 7/31/02		8/1/02 – 7/31/03			
Budget Categories	CALFED Share	LWWC Share	CALFED Share	LWWC Share		
Salaries & Wages	\$58,000	\$59,000	\$82,000	\$35,000		
Fringe Benefits (18%)	10,440	10,560	14,700	6,300		
Indirect Costs	8,000	8,000	8,000	8,000		
Supplies – print workbooks	5,000	5,000				
Equipment – Laptop computer	3,000					
Consultants			20,000	10,000		
Travel	4,150	3,000	4,150	3,000		
Total Costs	\$88,590	\$85,560	\$128,850	\$62,300		
TOTAL COSTS	CALFED Share		LWWC Share		Project Total Costs	
Salaries & Wages	\$129,000		\$105,000		\$234,000	

**PSP CALFED Bay-Delta Program
Lodi-Woodbridge Winegrape Commission's Program for
Reducing NPS Pollution and Increasing Water use Efficiency in Vineyards**

Fringe Benefits (18%)	23,100	18,900	42,000
Indirect Costs	16,000	16,000	32,000
Supplies – print workbooks	5,000	5,000	10,000
Equipment – Laptop computer	3,000		3,000
Consultants	20,000	10,000	30,000
Travel	8,300	6,000	14,300
Total Costs	\$217,440	\$147,860	\$365,300

2. Budget Justification:

- a. Salaries and wages for project: 1 FTE for project manager at \$70,000/yr; 1 FTE Workbook technical coordinator at \$40,000/yr and 0.2 FTE project administration at \$7,000/yr (base salary of \$35,000/yr). Fringe benefits for project calculated at a rate of 18%. LWWC agrees to almost a 50/50 cost share in year one and a 70/30 cost share (CALFED/LWWC) in year 2.
- b. Supplies: 250 workbooks for participating growers at \$40 per copy = \$10,000. CALFED 50% of costs and LWWC 50%.
- c. Equipment: 1 laptop computer to house project database and be used at workbook workshops to record workbook evaluations = \$3,000.
- d. Consultants: \$30,000 for Dr. Jeff Dlott, RealToolbox Inc., to design grower survey document, carry out grower survey and achieve at least a 50% response rate, record and analyze survey data; write report on survey results for LWWC. CALFED paying 67% and LWWC paying 33%.
- e. Travel: Vehicles: 30,000 miles for 2 years for project manager and workbook technical coordinator at \$0.31/mi = \$9,300; \$5,000 for conference attendance for project manager and workbook technical coordinator for 2 years.

3. Benefit Summary and Breakdown:

a. Quantifiable outcomes and benefits:

The *Lodi Winegrower's Workbook* program has three quantifiable outcomes: 1) Reducing NPS pollution in LWWC vineyards ; 2) Increasing water use efficiency in LWWC vineyards; and 3) Increasing the level of adoption of sustainable farming practices by LWWC growers. However, given that the self-assessment program is voluntary it is very difficult to quantify beforehand the outcomes of the project. Not all winegrape growers are going to choose to work on the same set of sustainable farming practices. For example, some will choose to reduce the use of pre-emergent herbicides, others will choose to plant buffer strips of vegetation around their vineyards to prevent offsite movement of NPS pollutants, some will install drip irrigation systems to increase the efficiency of water use and reduce the inputs of synthetic fertilizers, while others will choose to implement more than one of these strategies. For participating LWWC growers a realistic pre-project estimate of outcomes is a 10-20% reduction in the use of pre-emergent herbicides, 80% of LWWC vineyards using drip irrigation by the end of the project period, a 10-20% reduction in the use of insecticides and miticides, a 10-20% reduction in the addition of nitrate fertilizers, and 40% of LWWC growers (representing 70% of the vineyard acres) having gone through a workbook workshop by the end of the project period.

Quantifying the benefits of the project also presents difficulties. Replacing conventional farming practices with sustainable ones may result in lower farming costs in some instances and higher farming costs in other instances. For example, to reduce or eliminate the use of pre-emergent herbicides it is necessary for a grower to either use mechanical under-the-vine weed control, which is very expensive, or use post emergent herbicides, which are often more expensive than pre-emergent herbicides. On the other hand, using drip irrigation to fertilize vines often results in a reduction in the application rates and therefore the cost per acre of fertilizers. The primary environmental benefit of NPS pollution reduction in vineyards is improved surface and ground water quality. Assigning a dollar figure to improved water quality is very difficult.

b. Qualitative outcomes and benefits:

The overall goal (outcome) of LWWC's SFP is having winegrape growers develop a sustainable farming mindset. Another way to state this is in a phrase that appears on the back of the *Lodi Winegrower's Workbook*, "Doing the right thing...in the right way...for the right reasons". The benefit of achieving this outcome is that each grower will manage their vineyards in a way that minimizes NPS pollution, maximizes water use efficiency, and maximizes environmental quality on their farm. If LWWC becomes recognized by the consumer for its area-wide SFP it will result in an increased sales of wine from the district.

4. Assessment of Costs and Benefits

- a. Analysis assumptions:** The costs of the project are primarily in the dollars needed to carry out the project. Each grower that participates in a workbook workshop will commit 3 hours to fill out the workbook and develop an action plan (@\$75/hr in kind cost) and will then commit a given amount of time and money to carry out their action plan. It is not possible to make an estimate of this cost since it is not possible to forecast beforehand what a grower will choose to implement. For the same reason it is not possible to assign a dollar figure to benefits.
- b. Costs:** \$365,300 project dollars; \$56,250 in kind grower participation in workshop (250 grower in 2 years participating in 1 workshop each of 3 hrs); unknown in kind grower costs for implementing action plans.
- c.** Not applicable
- d.** See 4a.

ATTACHMENT 2

February 14, 2001

To:

San Joaquin County Resource Conservation District
East Bay Municipal Utility District
Natural Resource Conservation Service

Re: Application for Water Use Efficiency Program Grant

I have written to inform you that on behalf of the Lodi-Woodbridge Winegrape Commission I am applying to the CALFED Bay Delta Program for a Water Use Efficiency Program Grant. Using the *Lodi Winegrower's Workbook* that you helped put together the objectives of LWWC's proposed project are to: 1) Reduce NPS pollution and increase water use efficiency in LWWC vineyards by engaging all LWWC growers (@650) in implementing the *Lodi Winegrower's Workbook* self-assessment program; 2) Measure the impact of the program on reduction of NPS pollutants and increased water use efficiency in LWWC and track the level of adoption of sustainable farming practices using a computer database system and survey tools; 3) Present the self-assessment workbook program as a model pollution prevention and water use efficiency program to other commodity groups in the Central Valley; 4) Report on project results to the CALFED Bay-Delta Program, revise the text of the *Lodi Winegrower's Workbook* based on project experience, and present lessons learned from the project.

If you have any questions regarding this grant proposal please contact me. I will keep you informed of the progress of this application.

Sincerely,

Clifford P. Ohmart
Research/IPM Director

ATTACHMENT 3

Resume: Clifford P. Ohmart

Education:

B.Sci. Forest Entomology 1972. State University of New York College of Environmental Science and Forestry.

Ph.D. Entomology 1976. University of California, Berkeley.

Employment:

Research/IPM Director, Lodi-Woodbridge Winegrape Commission 1996-present. Advisor to Commission's research program, supervise all aspects of IPM grower outreach program, direct BIFS program, advise local growers, PCAs and winegrape buyers on IPM issues.

Agricultural Consultant-Scientific Methods, Inc., Durham, CA, 1989-1996.

Specializing in developing and implementing IPM systems for growers in California.

Lecturer-Butte Community College, 1995.

Principal Research Scientist-Commonwealth Scientific and Industrial Research

Organization Division of Forest Research, Berkeley (3 years) & Canberra, Australia (10 years), 1977-1989. Carried out research on forest pest management in *Pinus* and *Eucalyptus*.

Research Entomologist-University of California, Berkeley 1976-1977

Professional International Experience:

Worked for CSIRO in Australia for 10 years.

Visiting scientist at the Swedish University of Agriculture, Uppsala, 1987.

Honors:

Graduated Magna Cum Laude, SUNY College of Forestry 1972

Awarded travel grants from CSIRO for trips to visit scientists in New Zealand, Canada, USA and Europe, 1979 and 1983.

Awarded visiting scientist's position at Swedish University of Agriculture May-Oct. 1987.

Given courtesy appointment Department of Entomology, University of California, Davis, 1996.

Committee participation (current):

USDA/USEPA Committee to Advise on Reassessment and Transition (CARAT), advises USDA and USEPA on implementation of the Food Quality Protection Act of 1996

California Department of Pesticide Regulation Pest Management Advisory Committee (PMAC)

American Vineyard Foundation's Pest Technical Advisory Committee

California Dept. of Food and Agriculture Glassy-winged Sharpshooter/Pierce's Disease Research Advisory Committee

Five Most Recent Publications:

Ohmart, C. P. and S. M. Matthiasson. 2000. *Lodi Winegrower's Workbook: A self-assessment of integrated farming practices*. Lodi-Woodbridge Winegrape Commission, Lodi. 135pp.

Broome, J. C., C. P. Ohmart, A. Moskow, and J. Waddle. 1998. *Exploring Eco Labelling for California Winegrapes: A Working Conference*. Conf. Proceedings, 4 February, 1998, Sacramento. University of California Sustainable Agriculture Research and Education Program. 112pp.

Elliott, H. J., Ohmart, C. P., and R. Wiley 1998. *Forest Insects of Australia: Ecology and Management*. Inkata Press, Singapore. 214pp.

Ohmart, C. P. 1996. Population dynamics of chrysomelid beetles feeding on *Eucalyptus*. *In: Jolivet, P. H. A. and M. L. Cox. Chrysomelidae biology. Vol 2. Ecological Studies*. SPB Academic Publishing, Amsterdam. pp. 263-269.

Macdonald, J. and C. P. Ohmart. 1993. Life history strategies of Australian pergid sawflies and their interactions with host plants. *In: Wagner, M. R. and K. F. Raffa. Sawfly life history adaptations to woody plants*. Academic Press pp. 485-502.

Ohmart has authored and co-authored two books, 31 publications in international research journals, 2 book chapters and 3 CSIRO Divisional Reports. A complete list of these publications is available on request.

Seminar and Conference Paper Presentations:

Ohmart has presented over 200 seminars, conference papers and symposia papers at Universities, government research organizations, and grower groups throughout the US, Canada, Australia, New Zealand, Sweden and Finland. He has also organized a 2 day conference exploring the topic of ecolabeling of winegrapes and 2 symposia for the Entomological Society of America's national meetings.